Mobile Media Server (Pi Zero 2W)

By portalman1994 in Circuits > Raspberry Pi 244 2

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TL;DR

Difficulty: ***Intermediate***

Planning to be off the grid? Build a portable media server on a Raspberry Pi Zero 2W that's powered by an Anker powerbank. This guide provides automated setup scripts that reduce total completion time to under two hours, opting for Plex (for its built-in DLNA feature) to keep CPU and RAM usage light and smooth compared to resource-heavy alternatives like Jellyfin. **No internet access** required once you have configured everything. Depending on usage, the Pi will stay powered between **24 to 30 hours** on a fully charged Anker powerbank.

Mobile Plex Server

Tired of using data to stream media? Well, there is a better way! You can build and manage your own mobile Plex server! After initial configuration, you don't require internet access and can be off the grid!

DLNA

Although this guide is for Plex, you can just use Plex's DLNA feature. That way you don't have to rely on the Plex app or need internet access.

Why Not Jellyfin?

I originally set out to make the guide for Jellyfin, but Jellyfin was too much of a load on the CPU and RAM for the Pi Zero 2W. After spending over 12 hours on optimizing Jellyfin and suboptimal results, I decided to go with

Plex. Plex is much easier to configure and uses significantly less CPU and RAM on the Pi Zero 2W than Jellyfin.

What are Scripts?

The scripts that are presented in this guide are for automating the plex installation and the configuration of the Pi and Plex. You are welcome the view the code. Instead of hours of configuring and troubleshooting commands, you only need an hour and a half to two hours to do everything in this guide.

Note: Please comment if something is unclear and I'll do my best to **update** this guide. Feel free to comment if you have a legitimate URL for getting Pi Zero 2Ws and micro SD cards.

Supplies

Electronics and Hardware

- **Raspberry Pi Zero 2W** *Tip: Check rpilocator to find stocked Pi Zero 2W boards for around $15–$22 USD (As of July 2026).*
- **Argon Pi Zero 2W Case or Flirc Pi Zero 2W Case** — Keeps the Pi passively cool inside the enclosure without needing a fan.
- **MicroSD Card (32GB or larger recommended)** — For the operating system and media library. *Tip: Compare price-per-gigabyte Micro SD Card options on diskprices.com.*
- **USB Drive (16 GB or larger recommended)** — For transferring media from your computer to the Pi.

Power and Cables

- **Anker Power Bank** — Portable battery to run the media server on the go.

- **Micro-USB Cable** — Connects the Anker power bank to the Pi Zero 2W for power.
- **USB-C Cable** — Needed to recharge the Anker power bank.
- **Micro USB OTG Cable** — Needed to connect the USB drive to your Pi.

Enclosure and Mounting

- **Plastic VHS Case** — Serves as the housing for the **Pi Zero 2W** and **Anker powerbank**. *Note: Look for these at thrift stores like Goodwill, Salvation Army, or Half Price Books.* ***Avoid brittle clamshell cases (vintage Disney tapes)****—they are too small for the components and snap easily when cut.*
- **Adhesive Pads / Double-Sided Tape** — To secure the power bank and Argon case inside the VHS shell so components don't rattle around.

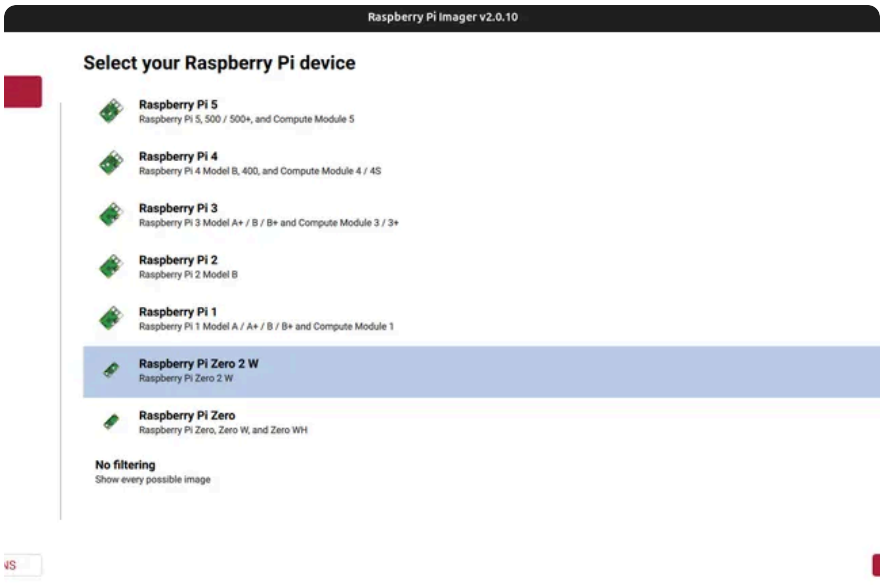
Client Devices

- **Computer (Windows, macOS, or Linux)** — Needed for flashing the OS, encoding media, and remotely configure the Pi.
- **Mobile Phone or Tablet** — Your playback screen for when you're traveling or camping.

Tools

- **Clippers** & **Pliers** — Needed for removing the internal raised parts of the VHS case.
- **Small Phillips Screwdriver** — Needed for assembly of the Argon case.

Step 1: Raspberry Pi Imager


Raspberry Pi Imager v2.0.10
Select your Raspberry Pi device
Raspberry Pi 5
Raspberry Pi 5, 500 / 500+, and Compute Module 5
Raspberry Pi 4
Raspberry Pi 4 Model B, 400, and Compute Module 4 / 4S
Raspberry Pi 3
Raspberry Pi 3 Model A+ / B / B+ and Compute Module 3 / 3+
Raspberry Pi 2
Raspberry Pi 2 Model B
Raspberry Pi 1
Raspberry Pi 1 Model A / A+ / B / B+ and Compute Module 1
Raspberry Pi Zero 2 W
Raspberry Pi Zero 2 W
Raspberry Pi Zero
Raspberry Pi Zero, Zero W, and Zero WH
No filtering
Show every possible image

1. Download and Install Raspberry Pi Imager

- Go to the official Raspberry Pi Software page and download **Raspberry Pi Imager** for Windows, macOS, or Linux.

2. Choose OS and Storage

- Plug your microSD card into your computer using an SD card reader.

- Open **Raspberry Pi Imager**.
- Under **Device**, select **Raspberry Pi Zero 2 W**.
- Under **Operating System**, select **Raspberry Pi OS (Other), Select Raspberry Pi OS Lite (64-bit)**. *Note: The Lite version doesn't include a desktop GUI, saving CPU and RAM for our media server!*
- Under **Storage**, select your microSD card.

Note: Be sure to take a screenshot of your configurations on Raspberry Pi Imager. So, you can review them in upcoming steps.

3. Pre-Configure OS Customization Settings

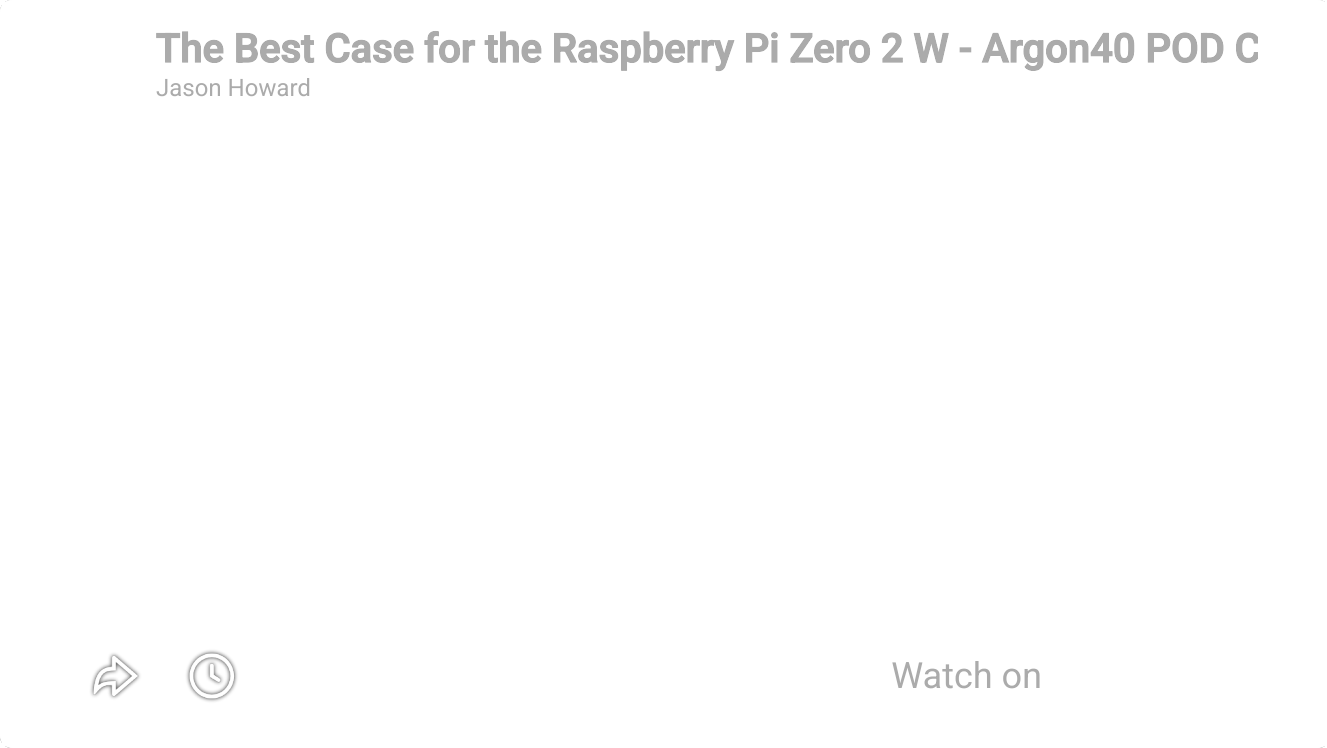
Click **Next**. When asked if you'd like to apply OS customization settings, select **Customisation**:

- **Hostname:** Set a custom name for your pi (e.g., vhs-media or travel-pi).
- **Localisation:** Choose the options (capitol city, time zone, keyboard layout) relevant to your region.

- **User:** Create a unique username and a strong password.
- **Wi-Fi:** Enter your home Wi-Fi details (SSID and password) so the Pi can connect to the internet for initial updates and downloads.
- **Remote Access:** Toggle **Enable SSH** and select **Use password authentication**.
- **Raspberry Pi Connect:** Don't Toggle. Click **Next.**

Click **Write**, then agree to write and verify the microSD card. Once finished, remove the card from your computer.

Step 2: Assemble the Argon Case



It's time to assemble the Argon case which will act as a heatsink for the Pi.

I don't recommend doing this project without an Argon or Flirc case.

Please refer to the YouTube video on how to assemble the Argon Pi Zero 2W Case. Start video at **1 minute and 59 seconds.** You only have to follow until **4 minutes and 30 seconds.**

Step 3: Pi Zero 2W

We want to perform a quick "bench test" to make sure the Pi boots up properly, connects to your home Wi-Fi network, and is reachable over SSH.

1. Insert the MicroSD Card

- Slide your freshly flashed microSD card into the microSD slot opening on the Argon case.

2. Connect Power

- Plug your Micro-USB cable into the **power port** of the Argon case (marked **PWR**). ⚠️ *Important:* Make sure you do **not** plug it into the USB/Data port, or you risk damage to the Pi.
- Connect the other end of the Micro-USB cable to your **Anker Power Bank** or a **USB port** on your **computer**.
- Press the power button on the Anker power bank (if needed).

Step 4: SSH

Prerequisites

Review your screenshot from the Raspberry Pi Imager step to remember your hostname and username.

Open a terminal window on your computer (Command Prompt/PowerShell on Windows, or Terminal on macOS/Linux) and enter the following command. replacing **hostname** with the hostname of the Raspberry Pi you're trying to ping:

ping hostname

"Enter the following command, replacing the ip address placeholder with the IP address of the Raspberry Pi you're trying to connect to and **username** with your username:

ssh username@ip-address

When the connection works, you will see a security warning. Type yes to continue. You will only see this warning the first time you connect.

Enter your account password when prompted.

You should now see the Raspberry Pi command prompt:

DO NOT COPY AND PASTE! THIS IS AN EXAMPLE OF THE PI PROMPT!
username@hostname:~ $

You are now connected to the Raspberry Pi remotely, and can execute commands."

— Source: **Raspberry Pi Documentation**, "Remote Access"

Step 5: Download & Extract Scripts

Prerequisites

Remotely access the Pi via SSH from your computer.

Download

I have made several shell scripts for the uninitiated. Feel free to browse the files and the code on the archive. Download the scripts to the Pi by entering the following command:

curl -L -C - -O https://archive.org/download/pi-plex/pi-plex-setup.zip

Extract

Unzip plex-setup.zip:

unzip pi-plex-setup.zip -d ~/

Change Directory

Go into the plex-setup folder:

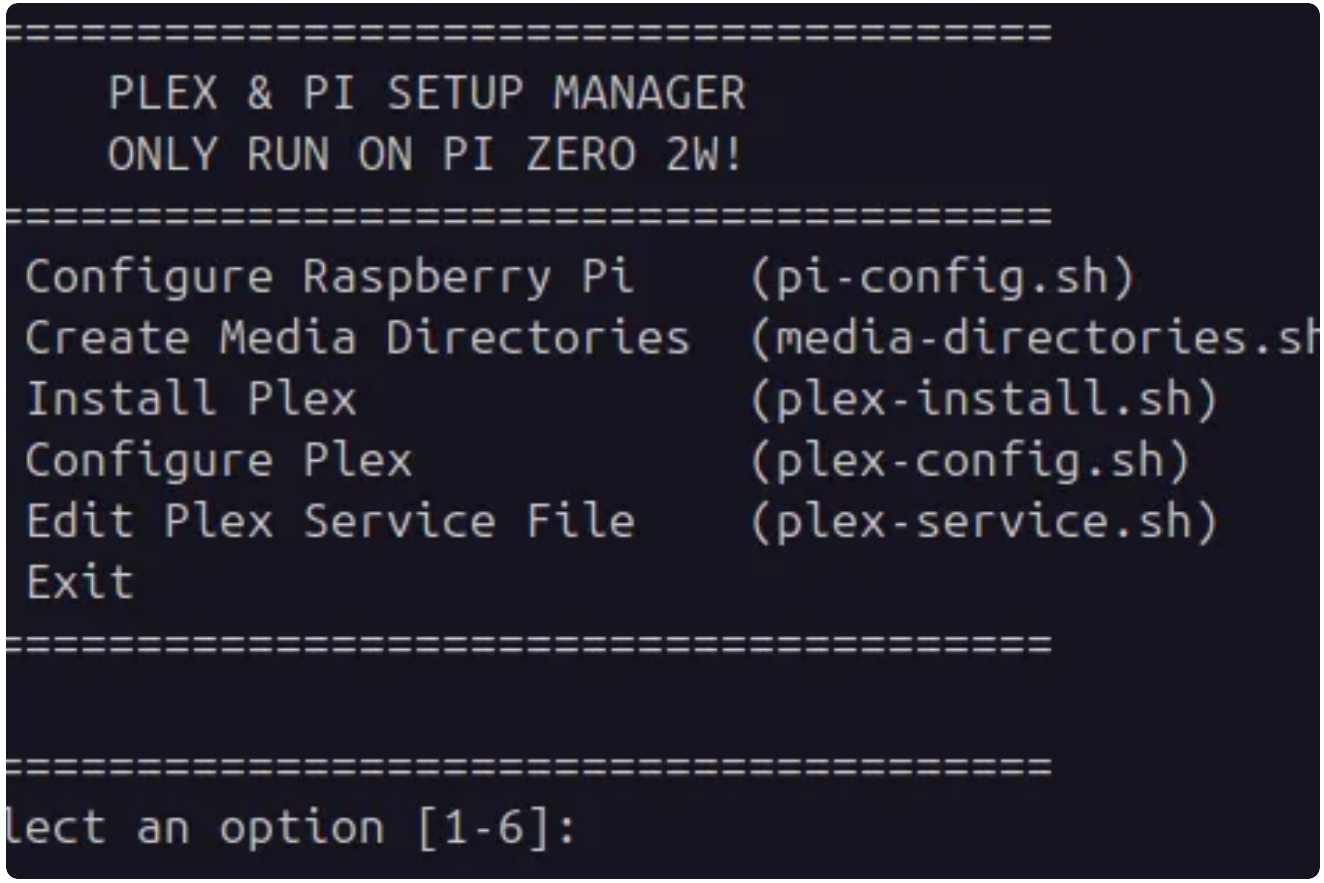
cd ~/pi-plex-setup

Chmod

Change the mode of config.sh to executable:

chmod +x ./config.sh

Step 6: Config Script - Pi



Prerequisites

Remotely access the Pi via SSH from your computer. Go to the directory you downloaded the scripts.

Execute

Run the script with sudo permissions:

sudo ./config.sh

Configure Pi

Type the following option followed by enter:

1

Create Media Directories

Type the following option followed by enter:

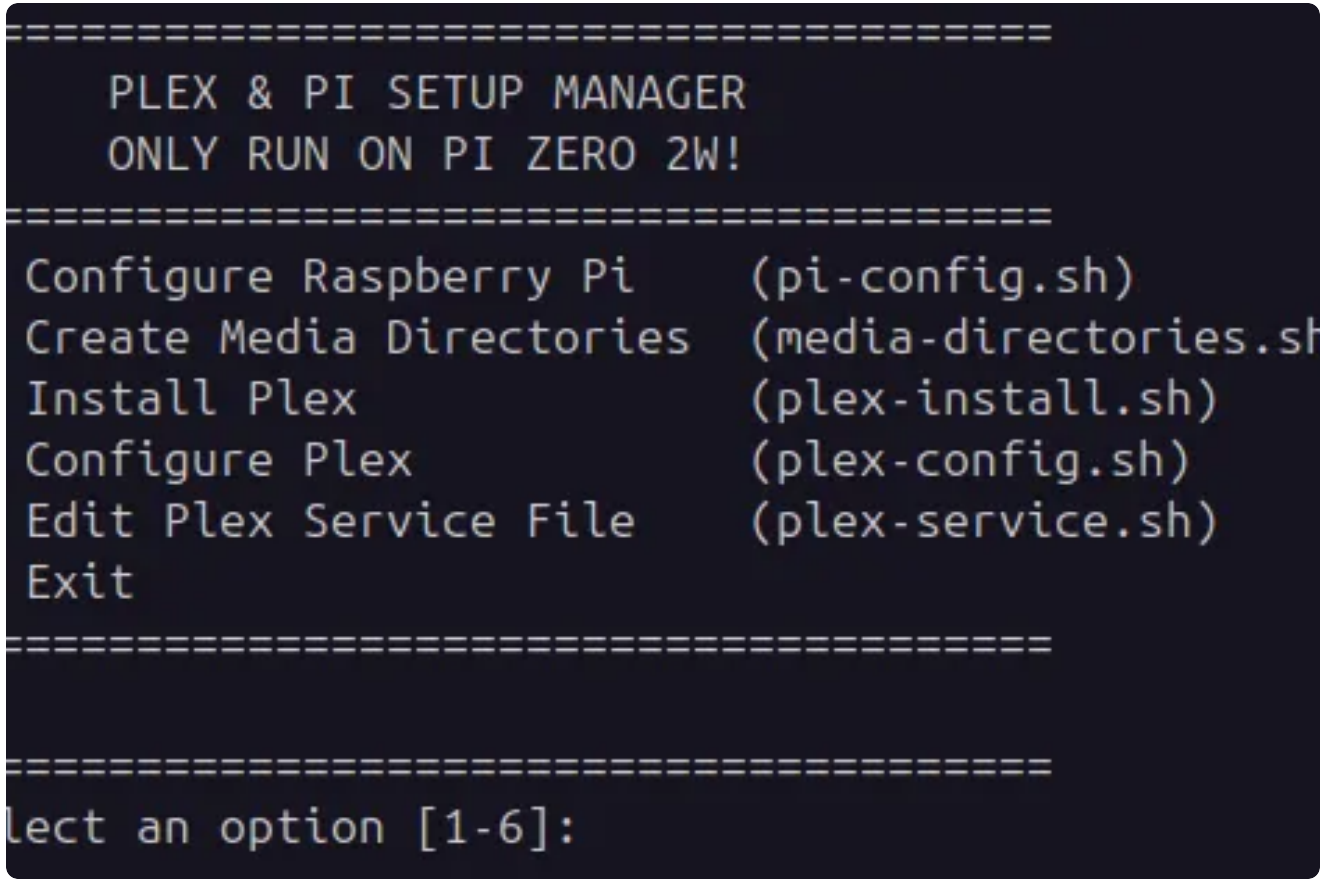
2

Exit Script

Type the following option followed by enter:

6

Step 7: Config Script - Plex I



Prerequisites

Remotely access the Pi via SSH from your computer. Go to the directory you extracted the scripts.

Execute

Run the script with sudo permissions:

sudo ./config.sh

Install Plex

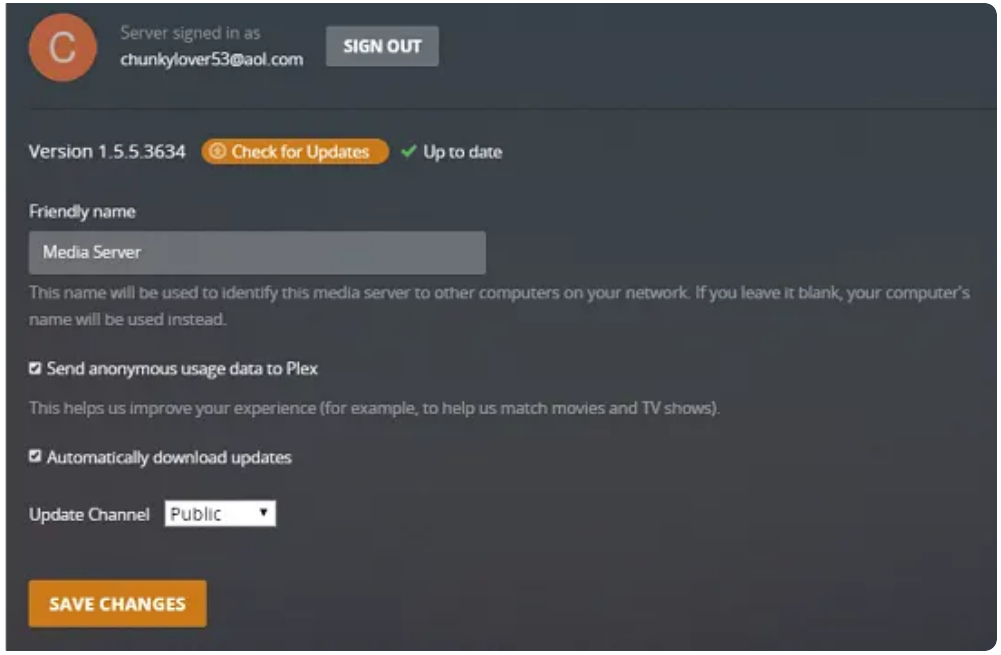
Type the following option followed by enter:

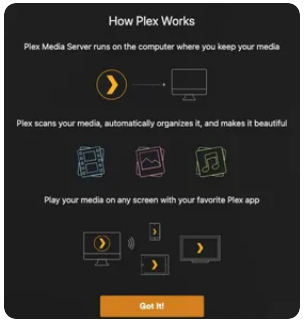
3

Exit Script

Type the following option followed by enter:

Step 8: Claim the Server


Server signed in as
chunkylover53@aol.com
SIGN OUT
Version 1.5.5.3634
Check for Updates
Up to date
Friendly name
Media Server
This name will be used to identify this media server to other computers on your network. If you leave it blank, your computer's name will be used instead.
Send anonymous usage data to Plex
This helps us improve your experience (for example, to help us match movies and TV shows).
Automatically download updates
Update Channel
Public
SAVE CHANGES


How Plex Works
Plex Media Server runs on the computer where you keep your media
Plex scans your media, automatically organizes it, and makes it beautiful
Play your media on any screen with your favorite Plex app
Got It!

plex
Server Setup
Name
Media Library
Finish
Give your server a friendly name to help identify it in Plex apps and on your network.
hostname
Allow me to access my media outside my home
Plex will attempt to automatically configure your network to allow Plex apps outside your home to access Plex Media Server on this computer. Remember this computer will need to be turned on to access your media.
Next

Claim the Server

Open a browser on your computer (**not** the Pi). Enter the following into the address bar, replacing pi-ip-address with your pi's IP address or hostname, followed by enter:

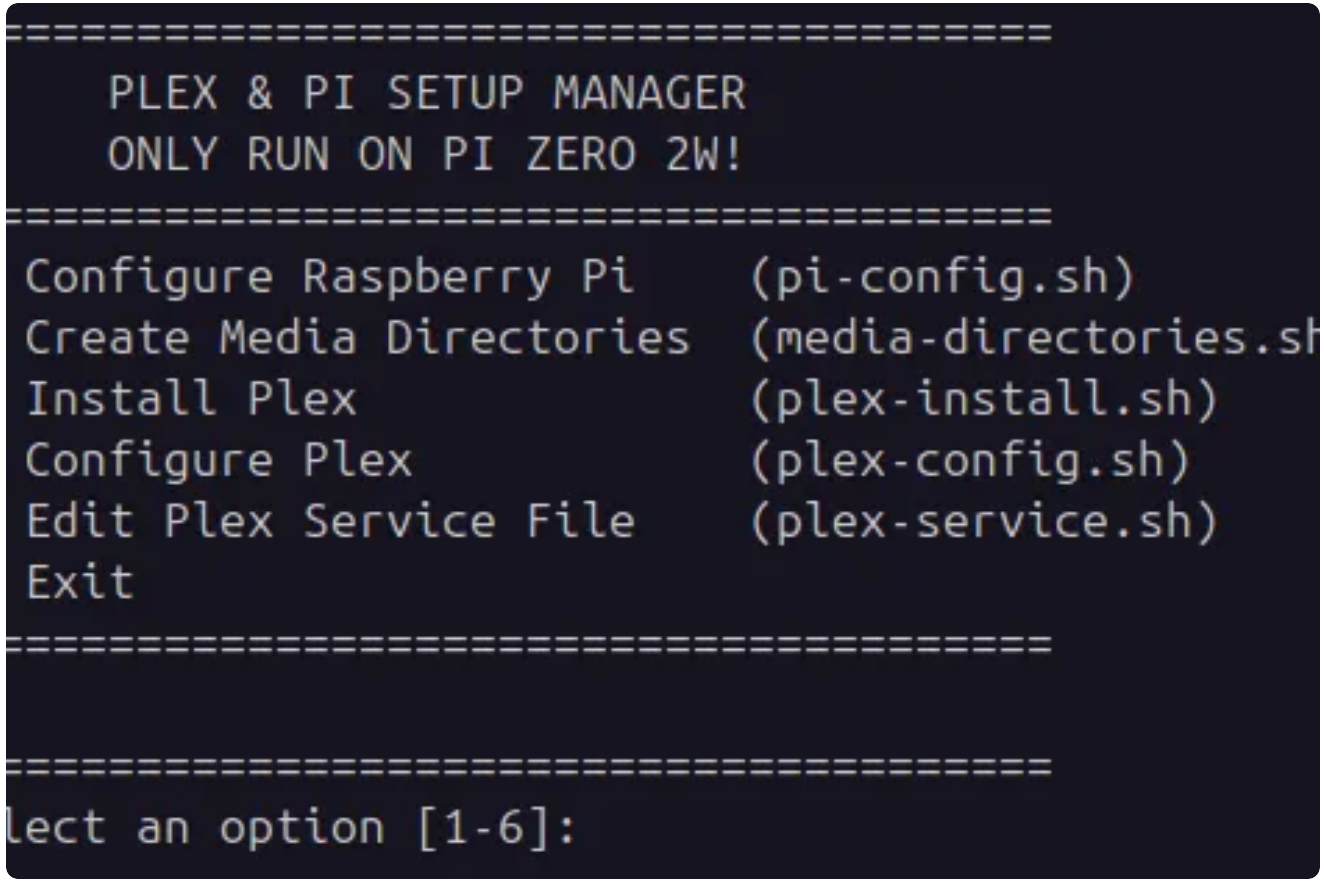
http://pi-ip-address:32400/web

"General settings for the Plex Media Server. You can access these under Settings > Server > General in Plex Web App.

If you haven’t yet claimed (signed in to) your Plex account on your Plex Media Server, you can do so here. Claiming the server will associate the server with your Plex account.

When you use the Claim Server button, your Plex account will be validated (or you’ll be directed to sign in, if you aren’t already) and then the Plex Media Server will be linked to that Plex account." — Source: **Plex Support Documentation**, "General"

Step 9: Config Script - Plex II



Prerequisites

Remotely access the Pi via SSH from your computer. Go to the directory you extracted the scripts.

Execute

Run the script with sudo permissions:

sudo ./config.sh

Configure Plex

Type the following option followed by enter:

4

Edit Plex Service

Type the following option followed by enter:

5

Exit

Type the following option followed by enter:

6

Step 10: Where's the Media?

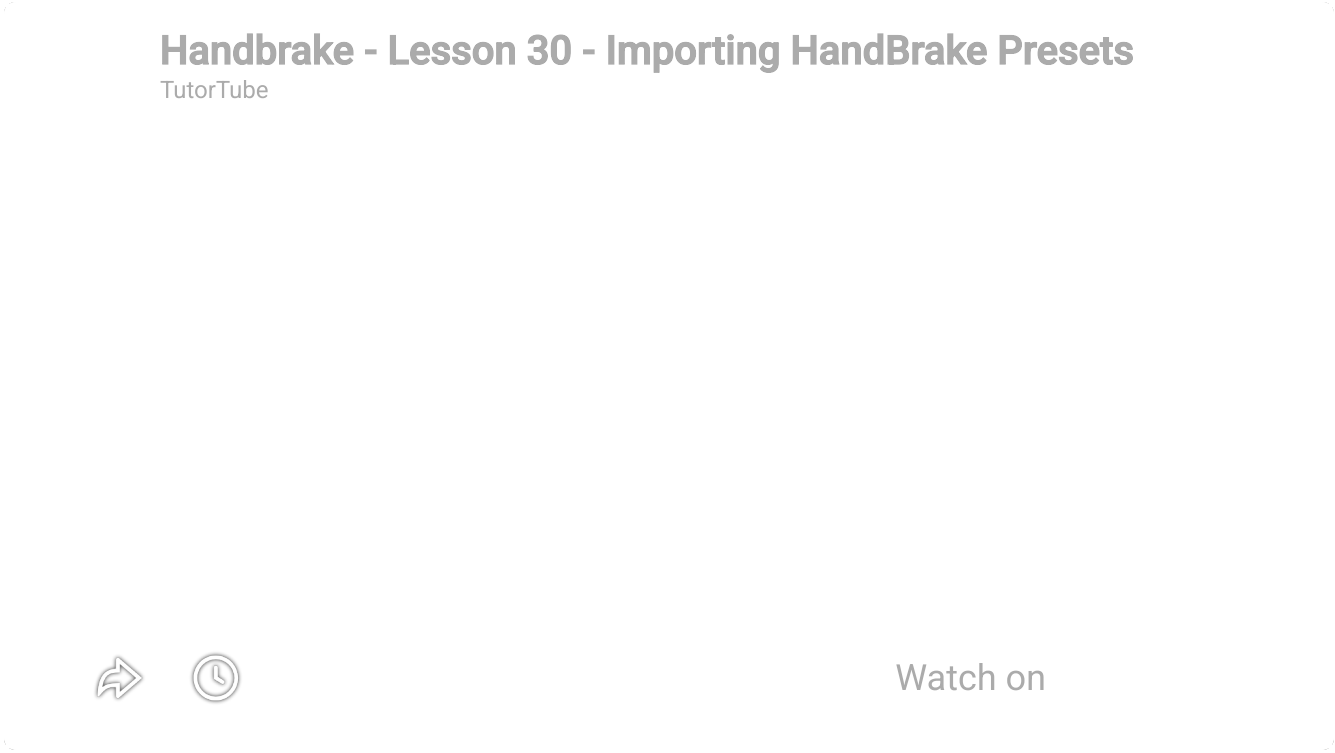
Channels DVR

If you have a cable subscription or a TV Antenna, you can use Channels DVR to record content from those sources. Keep in mind it will take the full runtime of the program being recorded. Like Tivo! I would recommend Channels DVR on a decent computer. Don't attempt to run Channels DVR on the Pi Zero 2W!

Internet Archive

There are public domain media on the Internet Archive's blog as well. Keep in mind you will most likely need to edit and encode the public domain media. Or if you know the name of the public domain media, you can do an advanced search on Internet Archive.

Step 11: Handbrake



Prerequisites

Have recorded media or public domain media. Do the following on your computer, not the Pi.

Transcode Media

A Pi Zero 2W can't transcode media due to its hardware limitations. However, you can encode your media on a decent computer, so the Pi never has to transcode.

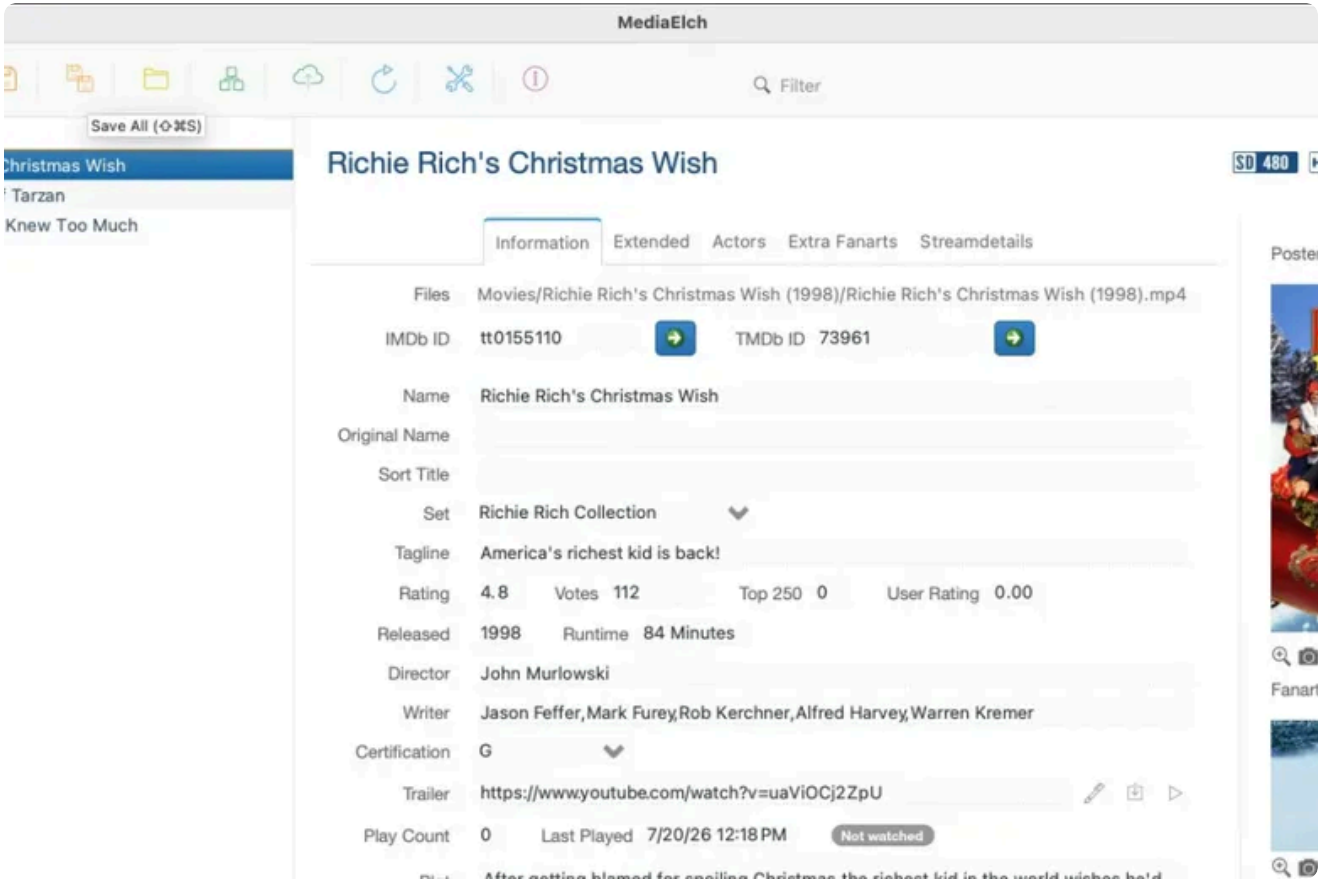
Enter Handbrake

"Most modern computers can run HandBrake. To download HandBrake to your computer, click the download button on the HandBrake website's Home page." — Source: **Handbrake Documentation**, "Downloading and installing HandBrake"

"HandBrake takes videos you already have and makes new ones that work on —nearly anything that supports modern video formats. This quick start guide assumes you have already downloaded and installed HandBrake." — Source: **Handbrake Documentation**, "Quick start"

This guide is **not** a guide to using Handbrake. I have attached two presets for Handbrake. You can download and import the presets into Handbrake by following this Lesson from TutorTube (YouTube).

Step 12: MediaElch



Prerequisites

Have recorded media or public domain media already encoded via Handbrake. Do the following on your computer, not the Pi.

Metadata

We can't rely on Plex to get the metadata due to the CPU load. We'll need to use MediaElch to identify and save metadata as an NFO file extension.

Enter MediaElch

MediaElch is cross-platform and free. I chose it over others (tinyMediaManager, Ember Media Manager, Media Companion) for those reasons. **Download** MediaElch v2.8.6 to your computer: Download MediaElch

Quick Start

Please refer to the Quick Start Guide on MediaElch's documentation on how to arrange your media files and import your media files into MediaElch.

Scrape Media

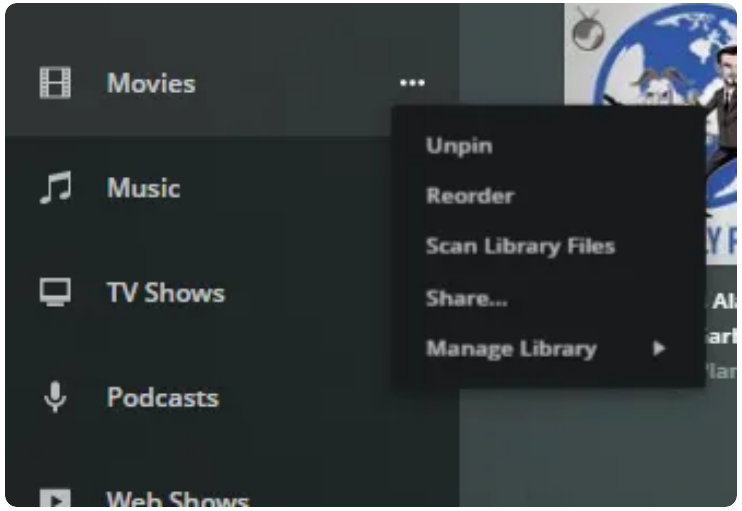
Please refer to MediaElch's documentation on how to scrape Movies and how to scrape TV Shows:

Save Metadata

- Save **Movies** by selecting on **Movies** on the left side and selecting **"Save All"** on the top row.
- Save **TV Shows** by selecting **TV Shows** on the left side and selecting **"Save All"** on the top row.

I have attached a screenshot to serve as a guide for this step. The media shown in the image were recorded from YouTube TV via Channels DVR.

Step 13: Transfer Media to Pi



Prerequisites

You have already encoded media and have the metadata for your media. Copy the media from your computer to a USB drive. Recommended drive format: **exFAT**. The following commands assume you have access to the Pi via **SSH.**

Insert USB Drive

Insert the Micro USB OTG cable into the middle micro-USB port. Insert the USB drive into the female USB port of the USB OTG Cable.

Install exfat-fuse

sudo apt update && sudo apt install exfat-fuse ntfs-3g -y

Find Your USB Drive

Type the command followed by enter to see a list of connected devices.

lsblk

> **Note:** Look at the size column in the list. Find the device name starting with /dev/sd (for example, /dev/sda1) that matches the storage capacity of your USB drive.

Mount the USB Drive

Substitute the mount point of your drive for your drive's mount point.

sudo mount /dev/sda1 /mnt/usb-drive

Move Your Files

Change **/movies/** and **/shows/** to match the real folder names on your USB drive.

sudo mv /mnt/usb-drive/movies/* /mnt/media/Movies/
sudo mv /mnt/usb-drive/shows/* /mnt/media/Shows/

View Your Files

ls -l /mnt/media/Movies/
ls -l /mnt/media/Shows/

Unmount the USB Drive

cd && sudo umount /mnt/usb-drive

Remove the Drive

Gently hold the Pi with one hand and unplug the middle micro-USB cable from the Pi with your other hand.

Scan Library Files

"A standard scan will:

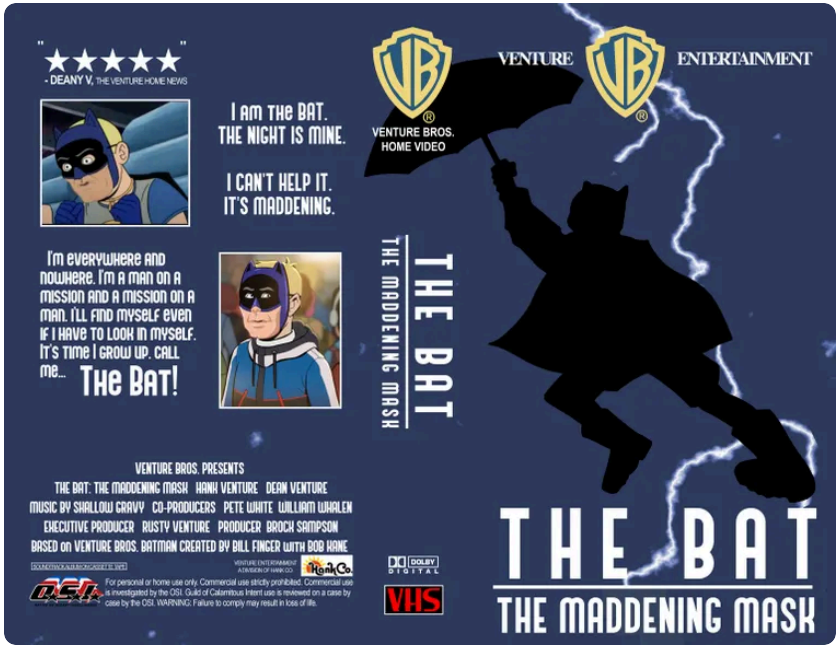
1. Scan for new or changed content in a library
2. Gather metadata for new/changed items as needed

This is initiated via the Scan Library Files action under the … menu for the library in the navigation sidebar of Plex Web App.

This action is performed on a library as a whole." Source: **Plex Support Articles**, "Scanning vs Refreshing a Library"

Note: The scan will only look at the NFO files for metadata. The scan will not use external metadata providers.

Step 14: VHS Case


- DEANY V, THE VENTURE HOME NEWS
I AM THE BAT.
THE NIGHT IS MINE.
I CAN'T HELP IT.
IT'S MADDENING.
I'm everywhere and nowhere. I'm a man on a mission and a mission on a man. I'll find myself even if I have to look in myself. It's time I grow up. Call me... The Bat!
VENTURE
ENTERTAINMENT
VENTURE BROS. HOME VIDEO
THE BAT
THE MADDENING MASH
VENTURE BROS. PRESENTS
THE BAT: THE MADDENING MASH HANK VENTURE DEAN VENTURE
MUSIC BY SHALLOW GRAVY CO-PRODUCERS PETE WHITE WILLIAM WHALEN
EXECUTIVE PRODUCER RUSTY VENTURE PRODUCER BROCK SAMPSON
BASED on VENTURE BROS. BATMAN CREATED BY BILL FINGER WITH BOB KANE
DOLBY DIGITAL
VHS
THE BAT
THE MADDENING MASH

Remove Interior Posts

Remove the circular, raised posts on the bottom of the case using the cutters and pliers. You want the interior of the VHS case to be as flush as possible.

Arrange Pi and Powerbank

Determine the best placement for your powerbank and Pi. You want enough room to be able to charge the Anker powerbank and Pi. And you want to be able to access all Pi ports easily.

Use Adhesive Pads

Place the strips in the case where the Pi and Anker powerbank will be placed. Place the Pi and powerbank on the adhesive strips.

Optional: Print Case Graphic

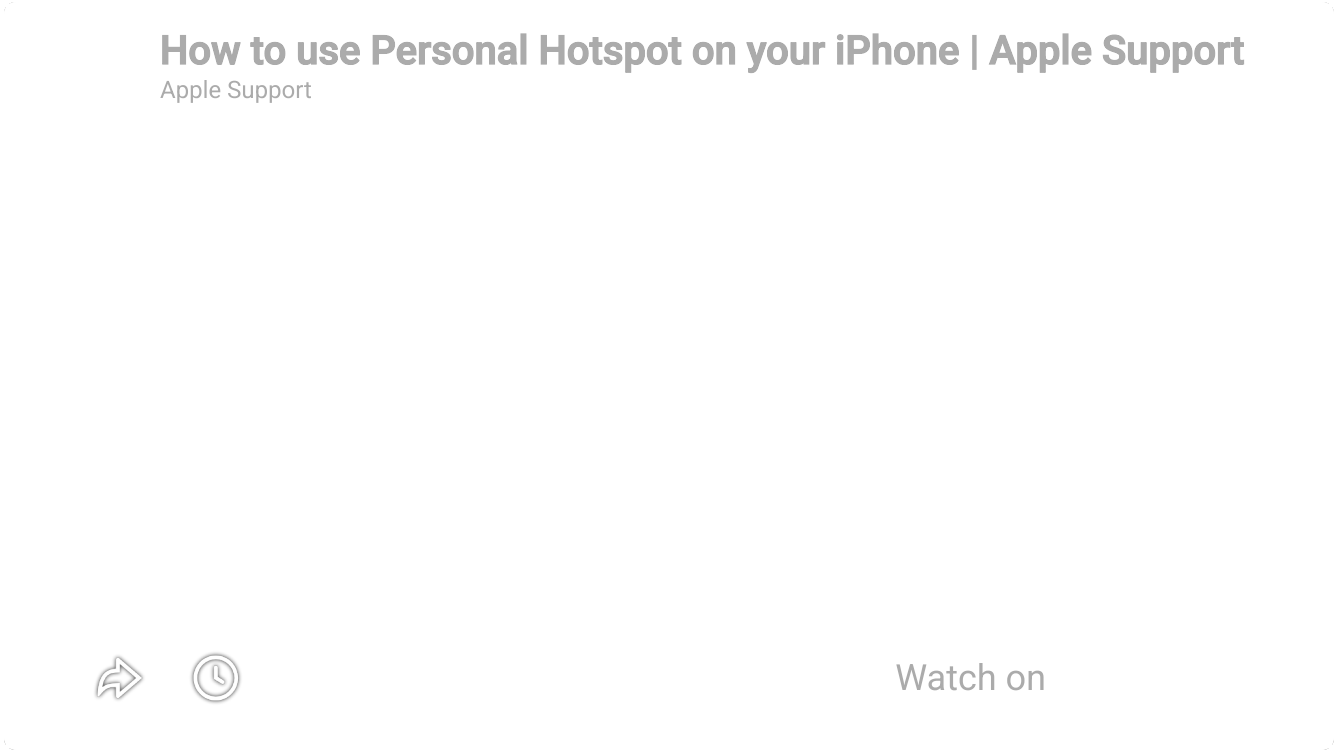
I have made a custom Venture Bros. VHS graphic which is available on the Archive. Download the PDF version of the VHS graphic. You can use an inkjet printer or a photo service (8.5x11) for printing the VHS graphic.

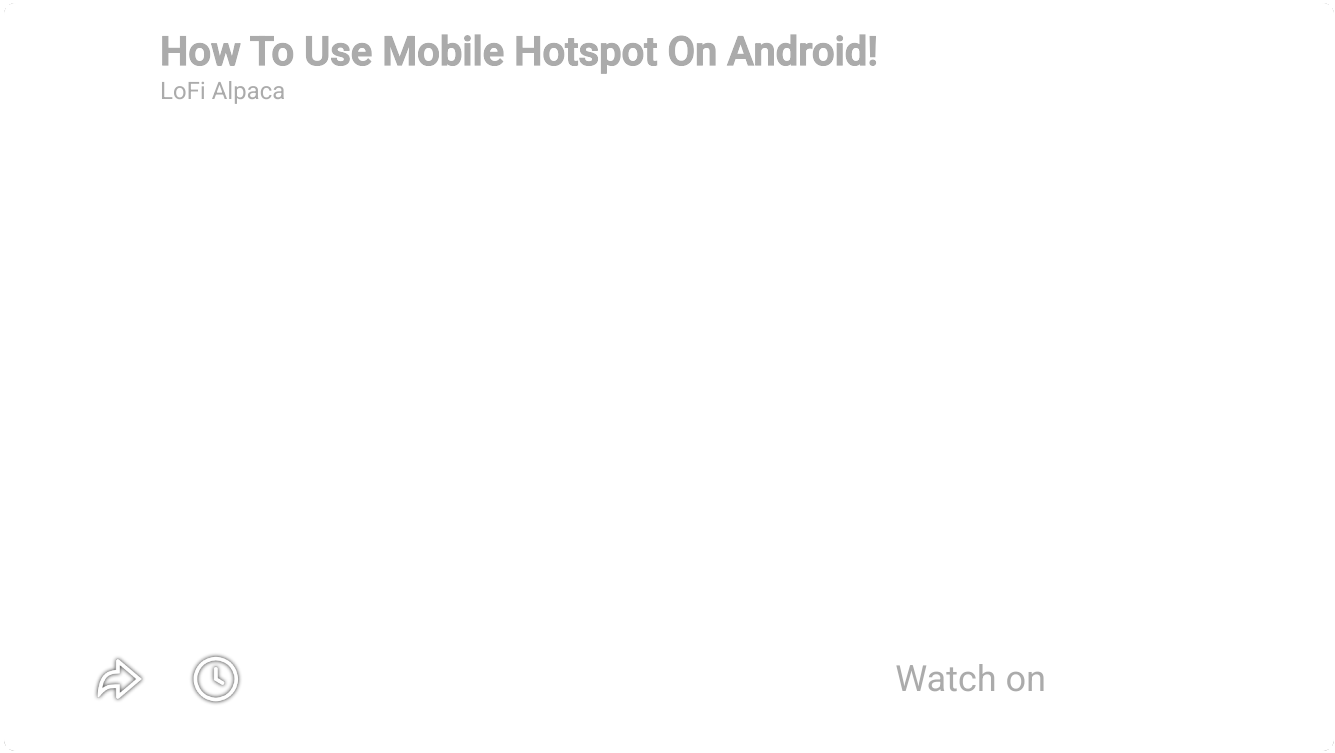
Here are the recommendations for printing the VHS graphic on an inkjet printer:

- Print on HP brand glossy paper.
- Choose Best for quality setting.

You will have to cut the white borders from the printed graphic, so the graphic will fit in the case.

Step 15: Mobile Hotspot





use up your data plan.

Strong Password

Make sure to use a strong password for the Hotspot! For help making a password, follow Google's Create a strong password guide. *Note*: Only follow Step 1: Create a strong password and the tips.

Configure Mobile Hotspot

Follow along with the video for your mobile phone:

- Android
- iOS

Note: Use a unique SSID and strong password!

Step 16: Connect Pi to Hotspot

Prerequisites

Enable the mobile hotspot. Remotely access the Pi from your computer via SSH.

Download

curl -L -C - -O https://archive.org/download/pi-plex/hotspot.sh -o ~/hotspot.sh

Change Directory

cd ~/

Chmod

chmod +x ./hotspot.sh

Execute

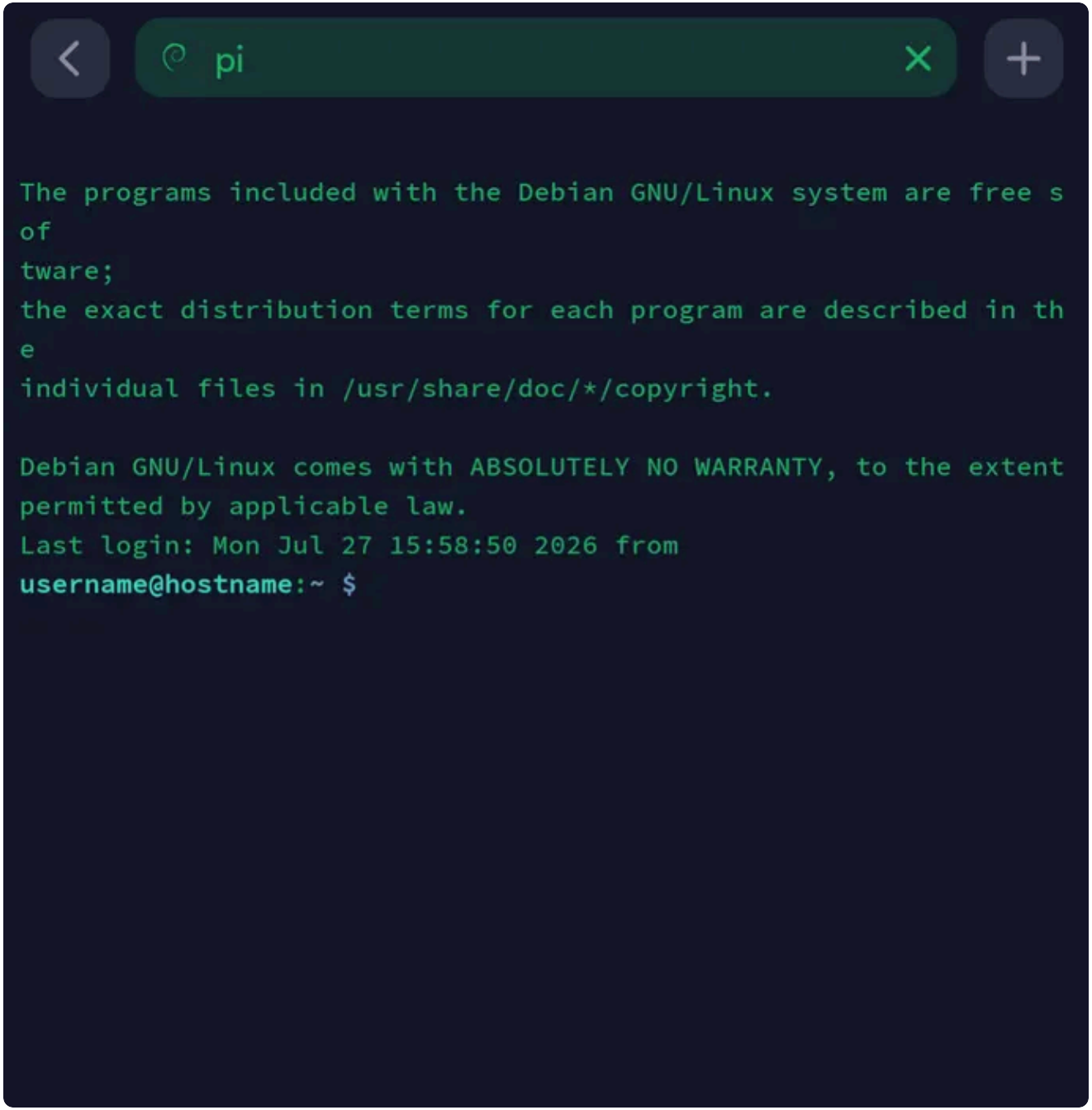
sudo ./hotspot.sh

Reboot Pi

sudo reboot

Note: After you reboot the Pi, the Pi will autoconnect to the mobile hotspot you configured.

Step 17: SSH on the Go


pi
The programs included with the Debian GNU/Linux system are free s
of
tware;
the exact distribution terms for each program are described in th
e
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Mon Jul 27 15:58:50 2026 from
username@hostname:~ $

Prerequisites

Enable your hotspot and ensure your Pi is connected to the hotspot. Follow this step on your phone.

Install

Terminus is an **SSH client** for iOS and Android that will allow you to access your Pi and tweak Pi settings. Granted the Pi is nearby and is connected to the hotspot. Install Terminus for your OS:

- iOS
- Android

Configure

Follow along with the SSH with a password guide from Terminus documentation.

Once you have configured and tested the SSH connection, you can turn off the hotspot.

Step 18: Time to Go Mobile

TL;DR

To set up media streaming while traveling, simply turn on your phone's mobile hotspot—the Raspberry Pi and your target devices (like TVs, laptops, or tablets) will automatically connect or can be manually joined to the same network. Once connected, use DLNA for broad cross-device compatibility, streaming media via your device's built-in software or a free multimedia player like VLC. Enjoy!

Recommendations

You only need to enable the phone's mobile hotspot and the Pi will autoconnect to the hotspot. I recommend using **DLNA** when you travel with the Pi. Almost all devices (TV, phones, tablet, laptop, desktop, streaming stick, gaming consoles) **support DLNA**. You can read more about **DLNA** on Wikipedia.

Access the Pi

Configure the devices' (TV, phones, tablet, laptop, desktop, streaming stick, gaming consoles) WiFi settings to connect to your phone's mobile hotspot. You can use built-in software on the device or use VLC if available from the device's appstore.

What is VLC?

"VLC is a free and open source cross-platform multimedia player and framework that plays most multimedia files as well as DVDs, Audio CDs, VCDs, and various streaming protocols." **Source:** "VLC Home Page"